REMARKS

Favorable reconsideration of this application, in view of the present amendment and in light of the following discussion, is respectfully requested.

Claims 1-28 are pending in this application. Claims 1, 2, 5, 10, 14, 15, 16, and 27 are amended. The amendments to the claims contained herein are of equivalent scope as originally filed, and thus are not narrowing. No claims are cancelled or added.

PRIORITY AND INFORMATION DISCLOSURE STATEMENT

Applicants note with appreciation the acknowledgement that the priority papers have been received and placed of record in the file and the references included in the Information Disclosure Statement filed April 19, 2002 have been considered.

ALLOWABLE SUBJECT MATTER

Applicants note with appreciation the indication in the March 4, 2005 Office Action that claims 2-10, 16, 17, and 27 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph, set forth in the March 4, 2005 Office Action and to include all the limitations of the base claim and any intervening claims. However, Applicants respectfully submit that the claim amendments and following discussion of this response traverse the outstanding claim objections and rejections, and therefore place claims 1-28 in condition for formal allowance. Accordingly, claims 2-10, 16, 17, and 27 have been maintained in dependent form.

CLAIM REJECTIONS UNDER 35 U.S.C. § 112

Claims 1-28 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Applicants respectfully traverse this rejection.

In response to the rejection of claims 1 and 2 under 35 U.S.C. § 112, second paragraph, as including the language "i.e.," claims 1 and 2 are amended to delete the identified language, thereby clarifying the claimed invention.

In response to the rejection of claims 2, 5, and 6 as lacking antecedent the basis for the features "make-strict procedure" and "non-strict", claim 2 is amended to delete the language "non-strict", and claim 5 is amended to depend from claim 2 instead of claim 1. Further, Applicants respectfully note that the "make-strict procedure" recited independent claim 6 has sufficient antecedent basis since the "make-strict procedure" was introduced in amended claim 2, and claim 6 depends from claim 2.

In response to the rejection of claim 24 as lacking sufficient antecedent basis for "a set of pre-aggregation data" in claim 23, the Applicants respectfully submit that this rejection is erroneous since "a set of pre-aggregation data" is introduced in claim 24 and not claim 23.

In light of the above, Applicants respectfully request that the rejections of claims 1-28 under 35 U.S.C. § 112, second paragraph be withdrawn.

CLAIMS REJECTIONS UNDER 35 U.S.C. § 103

Claims 1, 11-15, 18-26, and 28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Colby et al. (U.S. Publication No. 2002/0077997 A1, herein Colby) in view of Pouschine et al. (U.S. Patent No. 5,918,232, herein Pouschine). The Applicants respectfully traverse this rejection for the reasons detailed below.

As explained in the Applicants' specification from page 2, line 34 to page 3, line 8, conventional pre-aggregation techniques assume that the dimensional structures are

summarisable. More specifically, the mappings in dimension hierarchies may be *onto*, *covering*, and *strict* (i.e., the relationships between facts and dimensions must be many-to-one, and the facts must always be mapped to the lowest categories and dimensions).

Conversely, example embodiments of the present invention provide transformation techniques that render dimensions with hierarchies that are *non-onto, non-covering,* and/or *non-strict* summarisable. Amended claim 1 is directed to a method for transforming a general on-line analytical processing dimension into an at least partly aggregation normalised dimension, by means of a computer, the dimension having dimension values organized into categories of dimension values based on a partial ordering, the dimension comprising mappings of links between dimension values. More specifically, the method of amended claim 1 recites "analysing the mapping to determine *irregularities* of the dimension, by means of analysing means executed by the computer." Independent claim 15 recites features similar to the features of the method recited in amended claim 1.

Independent claim 23 recites a computer system for on-line analytical processing having data storage means associated therewith on which a multi-dimensional objection is stored. The multi-dimensional object recited in claim 23 includes a set of facts, a first plurality of dimensions, "at least one of the dimensions of the first plurality of dimensions being *irregular*," and a second plurality of dimensions.

In Colby, the dimension is already assumed to be summarisable. Evidence of this assumption is included in paragraph [0050] of Colby, stating "A CREATE HIERARCHY statement names pairs of columns that satisfy functional dependencies and identify the tables to which the columns belong." The functional dependency statement indicates that Colby assumes that a hierarchy is a many-to-one relationship. Accordingly, the functional dependency statement indicates that the dimension input to the method described by Colby is

already summarisable (e.g. aggregation normalised in the Applicants' specification as described in detail in the Applicants' specification on page 21, lines 12-15).

Consequently, <u>Colby</u> does not disclose, teach, or suggest a step of "analysing the mapping to determine *irregularities* of the dimension," as recited in amended claim 1, since it is assumed in <u>Colby</u>, like the conventional pre-aggregation techniques described above, that there are no such *irregularities* in the mapping. Therefore, <u>Colby</u> does not allow the mapping to be *irregular*, namely to be *non-onto, non-covering,* and/or *non-strict* as described in the Applicants' specification on page 21, line 17-26, page 21, lines 28 to page 22, line 5, and page 22, line 19 to page 23, line 26, respectively, for example.

Therefore, Applicants respectfully submit that <u>Colby</u> fails to disclose, teach, or suggest the method recited in amended claim 1, including "analysing the mapping to determine *irregularities* of the dimension, by means of analysing means executed by the computer."

Further, as described above, claim 23 recites "at least one of the dimensions of the first plurality of dimensions being *irregular.*"

Regarding independent claim 23, the March 4, 2005 Office Action cites <u>Colby</u>, page 8, paragraph [0097] as teaching the feature "at least one of the dimensions of the first plurality of dimensions being *irregular*," of amended claim 1.[1] Therefore, the March 4, 2005 Office Action seems to be interpreting *"denormalized"*, used referencing timetable 120 in <u>Colby</u>, as equivalent to *"irregular"* used to describe the at least one of the dimensions of the first plurality of dimensions in claim 23. Applicants respectfully submit that the terms *"denormalized"* used in <u>Colby</u> and *"irregular"* used in claim 23 are not equivalent.

Applicants respectfully note that *"irregular"* is a property of a dimension, which is a certain type of mathematical partially ordered set as described, for example, in the

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[1]   Office Action mailed March 4, 2005, page 8, lines 4-6.

Applicants' specification from page 18, line 18 to page 19, line 3, and *"__denormalized__"* as used in Colby is a property of a database table which is a type of mathematical relation.

Therefore, Applicants respectfully submit that Colby also fails to disclose, teach, or suggest each and every feature of claim 23 that includes "at least one of the dimensions of the first plurality of dimensions being *__irregular__*," as recited in claim 23.

Further, Applicants respectfully note that the term "normalise" as recited in the Applicants' specification on page 23, lines 8-15 and its related terms "non-normalised", "un-normalised", and "aggregation normalized" have no connection, apart from syntactical similarity, to the database design term "normalized" and related terms, such as "denormalized", as defined in any database design textbook, e.g., "Garcia-Molina, Ullman, Widom: Database Systems: The Complete Book, Prentiss-Hall 2002. Applicants respectfully submit that one of ordinary skill in the art at the time the claimed invention was made would understand the terms "normalised", "non-normalised", "un-normalised", and "aggregation normalised" as defined in the Applicants' specification and would not misconstrue the terms to be equivalent to the database design terms.

Pouschine is directed to a multidimensional modeling method and system for creating hyper structures which are to be contained in a computer memory. The system and method of Pouschine obtains measurements of physical objects and activities which are related to the entity to be modeled in the computer hyper structure.[2]

However, Pouschine fails to cure the deficiencies of Colby with respect to the features of independent claims 1, 15, and 23 described above.

Therefore, Applicants respectfully submit that neither Colby nor Pouschine, either alone or in any proper combination, disclose, teach, or suggest each and every feature of independent claims 1, 15, and 23.

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[2] Pouschine, Abstract.

Therefore, Applicants respectfully request that the rejection of claims 1, 15, and 23 and claims 11-14, 18-22, 24, 25, and 28 depending therefrom under 35 U.S.C. § 103(a) as unpatentable over <u>Colby</u> in view of <u>Pouschine</u>, be withdrawn.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-28 in connection with the present application is earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants hereby petition for a one (1) month extension of time for filing a reply to the outstanding Office Action and submit the required $120.00 extension fee herewith.
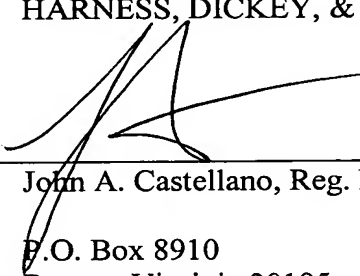
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John A. Castellano at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By _____

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